

Level 6 Daily Practice

Try these questions and then self mark them. Ask about those questions that you didn't understand. These should take **15** minutes to do the questions.

Sheet 2

Level 6 Daily Practice

You should be able to answer all the questions in this booklet in 15 minutes.

Q1. (a) Every day a machine makes **500 000** drawing pins and puts them into boxes.

The machine needs **150** drawing pins to fill a box.

How many boxes can be filled with the 500 000 drawing pins?

..... boxes

1 mark

(b) Each drawing pin is made from **0.23g** of metal.

How many drawing pins can be made from **1kg** of metal?

.....

..... drawing pins

2 marks

2. Oak leaves

Pupils are investigating oak leaves.

They want to collect a sample of oak leaves.

Here is their plan for how to collect the sample.

Plan
Choose one oak tree.
Take 10 leaves from the lowest branches of the tree.

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Give **two** reasons why this sample of leaves may **not be representative** of all oak leaves.

1/1/2020

First reason:

1 mark

1/1/2020

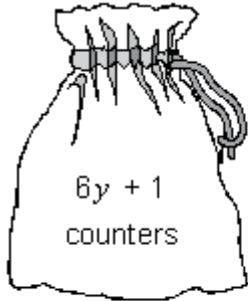
Second reason:

1 mark

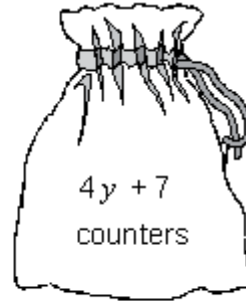
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Q3. Counters

- (a) Bags A and B contain some counters.



Bag A



Bag B

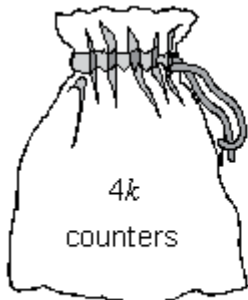
The number of counters in each bag **is the same**.

Work out the value of y

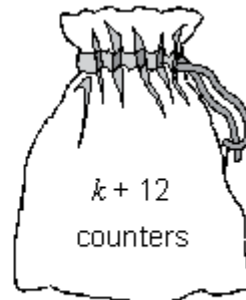
Handwritten mark

.....
2 marks

- (b) Bag **C** contains **more** counters than bag **D**.



Bag C



Bag D

What is the **smallest** possible value of k ?

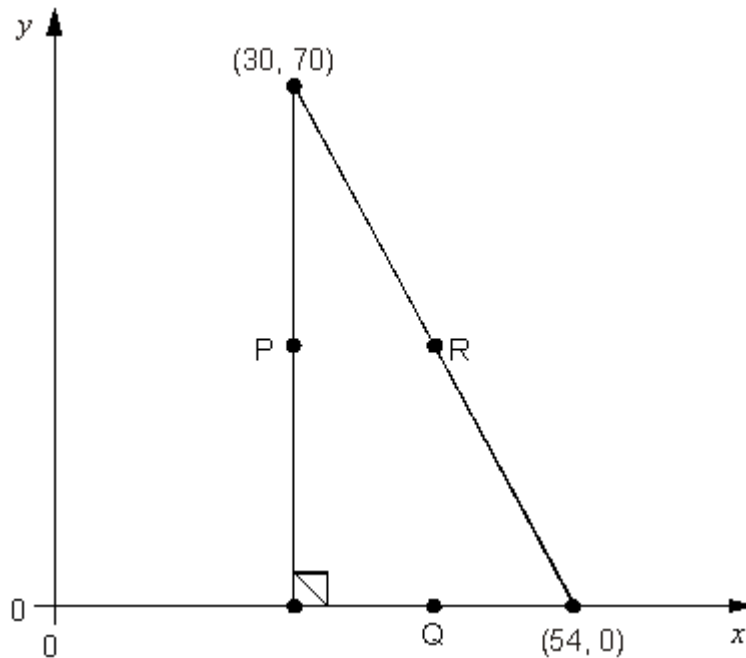
Handwritten mark

2 marks

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Q4. Midpoints

The diagram shows a right-angled triangle.



Not drawn accurately

P, Q and R are the **midpoints** of the sides of the triangle.

Work out the coordinates of P, Q and R.

P is (..... ,)

1 mark

Q is (..... ,)

1 mark

R is (..... ,)

1 mark

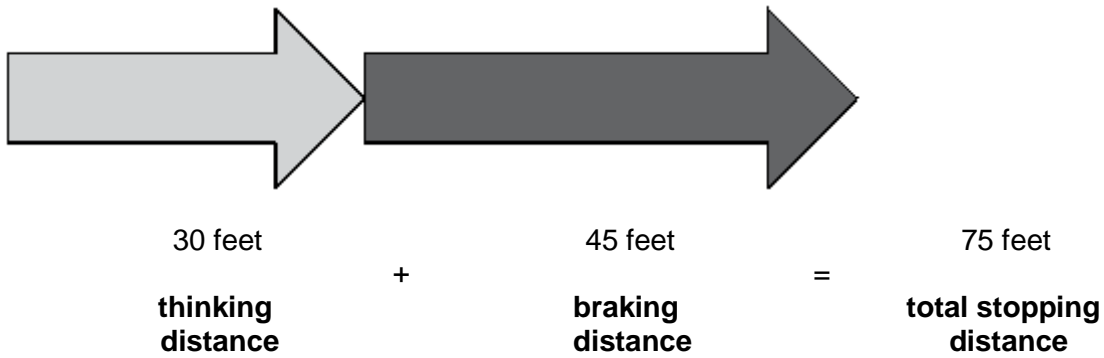
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Q5. Thinking distances

The distance needed for a car to stop depends on how fast the car is travelling.

This distance can be calculated by adding the thinking distance and the braking distance.

For example: at **30 miles per hour**



Here are the formulae to work out the thinking distance and the braking distance for a car travelling at V miles per hour.

$$\text{Thinking distance} = V \text{ feet} \quad \text{Braking distance} = \frac{V^2}{20} \text{ feet}$$

- (a) A car is travelling at **70 miles per hour**.

What is the **total stopping distance** for this car?



..... feet
2 marks

- (b) A different car is travelling so that its **braking distance** is **125 feet**.

How fast is the car travelling?

..... miles per hour

1 mark

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M1. (a) 3333

Do not accept answer of 3334

1

(b) 4347

2

M2. Gives a correct reason from one of the five categories below that states or implies the problem, or suggests an improvement

The most common correct reasons:

Category 1: Refer to the number of leaves in the sample being too small
eg, problem

- The sample is too small
- Those 10 leaves might all be diseased

eg, improvement

- They should pick more than 10

Category 2: Refer to the number of trees in the sample being too small
eg, problem

- One oak tree might be different from others
- May be something wrong with that tree

eg, improvement

- They should use more than one tree

Category 3: Refer to the conditions in which the tree is growing being too uniform
eg, problem

- Different conditions may affect the leaves on other trees
- The soil might be very bad in that area

eg, improvement

- They should choose trees in different areas

Category 4: Refer to the area of the tree from which the leaves are picked being too small
eg, problem

- The leaves on higher branches might be different
- Those branches may not get enough light

eg, improvement

- They need leaves from all over the tree

Category 5: Refer to the period for picking the sample being too short
eg, problem

- The leaves may be different at different times of year
- It may be winter

eg, improvement

- They should collect throughout the year

Accept minimally acceptable reason

eg, problem

- *Too small*
- *Only 10*
- *Not enough*

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- *Just one*
- *Same growing conditions for the tree*
- *Other branches might be different*
- *Only the lowest branches*

eg, improvement

- *100 is better*
- *More than one*
- *Need different areas*
- *Use other branches*
- *Collect at other times*

! ***For the first or the second reason, more than one reason given within one response***

Do not accept a correct response accompanied by an incorrect response from the same category.

Otherwise ignore irrelevant or incorrect further responses.

If two correct reasons from different categories are given in one response space, both marks should be awarded

eg

- *They need more trees from more areas*

Mark as 1, 1

Do not accept incomplete reason that repeats the information given with no further explanation

eg

- *They are taking 10 leaves*
- *They are using one oak tree*
- *They are taking them from one part of the tree*

1

Gives a correct reason from a different category from one already credited

1

(U1)

[2]

M3. (a) Gives the value 3, with no evidence of an incorrect method

2

(b) 5

2

(U1)

[4]

M4. Gives P as (30, 35)

1

Gives Q as (42, 0)

1

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Gives R as (42, 35)

M5. (a) 315

(b) 50

(U1)

[3]

2

1

[3]